

ABSTRACT OF THE DISCLOSURE

An electrostatic transducer circuit and method of tuning the same, in which a balancing circuit is inserted into the electrostatic transducer circuit, is described. The electrostatic transducer circuit generally includes transmit circuitry, receive circuitry, a capacitive electrostatic transducer and the balancing circuit. The balancing circuit can include, either singly or in combination, an inductance and a negative capacitance. The balancing inductance is tuned to counteract the negative reactance of the capacitive electrostatic transducer at a desired operating frequency and can be inserted into the transmit circuitry and/or the receive circuitry. The balancing negative capacitance is tuned to counteract the capacitance of the capacitive electrostatic transducer and can be inserted into the receive circuitry and/or the transmit circuitry. The transmit circuitry can be isolated from the receive circuitry, and vice versa, once the balancing circuit has been inserted. Isolation can be achieved by switching the electrostatic transducer circuit between transmit and receive modes of operation, or by providing separate transmit and receive electrode subsets.